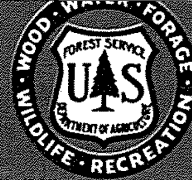


# U.S. Forest Service RESEARCH NOTE



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## A RIGID-FRAME CABIN FROM HARDWOOD LUMBER

The current emphasis on outdoor recreation and the building of second homes and summer cottages or cabins has led to the development of new types of rustic structures. At our Wood Products Pilot Plant we have designed a cabin that is attractive, easy to maintain, and low in cost (fig. 1). The cabin was especially designed to be constructed from native hardwood lumber and other materials available at any lumberyard. The parts can be fabricated either in a woodworking shop or at the building site.

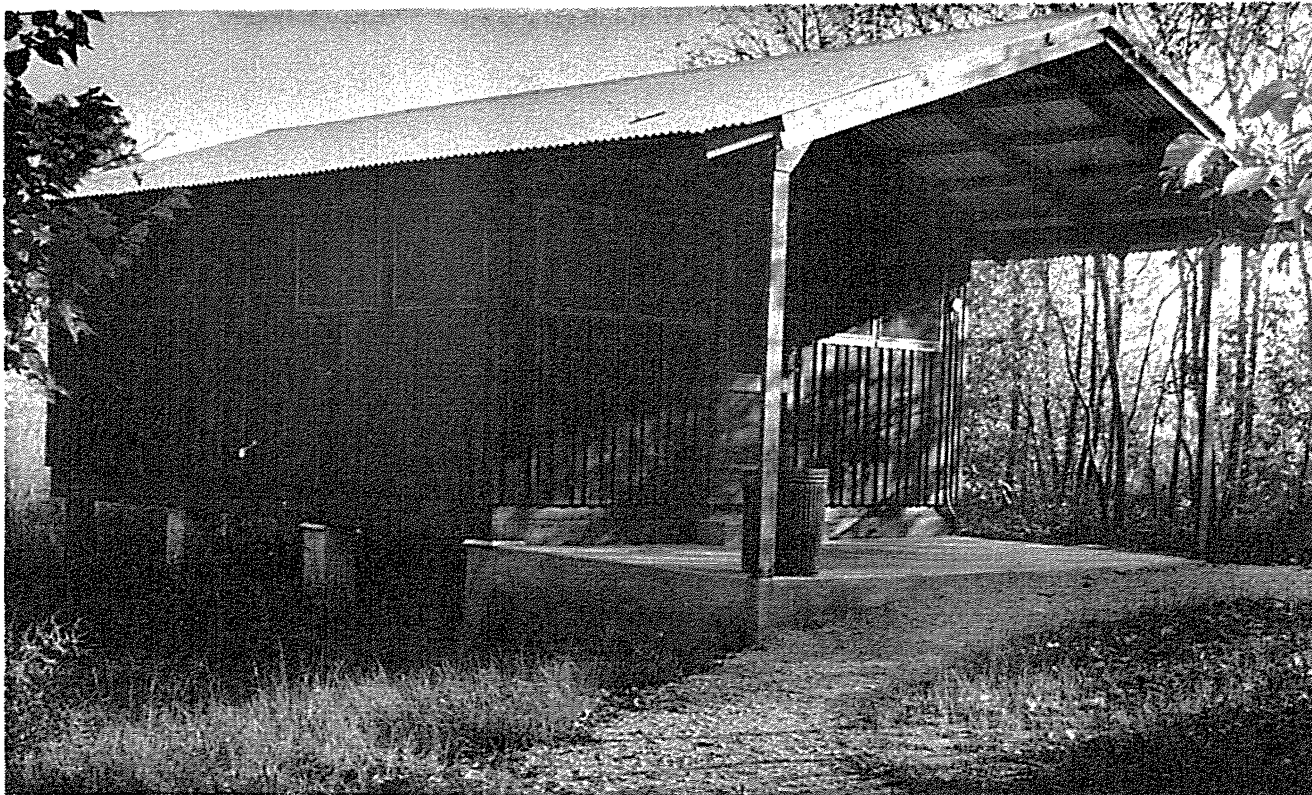


FIGURE 1.--A rigid-frame cabin made from hardwood lumber.

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A major feature of our cabin is rigid-frame construction, a type of assembly that has been found to be especially suitable for rustic buildings. This frame consists of a series of "arches" made by joining studs to rafters with nail-glued plywood gussets. Such construction is simple and provides clear spans. Cost is comparable to other clear-span systems.

Rigid-frame components (arches) are spaced 4 feet on centers along the length of the building and wall-panel units are installed between the frames. The end walls of the cabin are closed in with panel units too. The wall panels and the rigid frames can be installed on a conventional joist floor system, on concrete piers, on a foundation wall, or on a concrete slab. We used vertical board-and-batten on the exterior walls nailed to horizontal blocking installed between the frames. The roof can either be sheathed and shingled or it can be framed with purlins and covered with corrugated roofing material.

In our plan the rigid frames span 17 feet and, by a cantilever extension of the rafters, provide a 2-foot overhang for the roof. Usable clear area within the cabin is 16 by 20 feet (320 square feet) with an 8- by 17-foot (136 square feet) open porch at one end.

The cabin requires approximately 2,500 board feet of nominal 2-inch-thick, sound-square-edge grade, oak or hickory lumber for studs and rafters; 1,000 board feet of nominal 1-inch-thick, No. 2A Common, yellow-poplar lumber for siding; 450 board feet of 25/32-inch-thick tongue-and-groove oak flooring; and 600 square feet of 3/8-inch- and 3/4-inch-thick Douglas-fir plywood for gussets and sub-flooring. Although all wood parts for the cabin can be cut and assembled at the site, cost can be reduced if the parts are prefabricated and partially assembled in a woodworking shop, transported in sub-assemblies, and then erected on the site. Prefabrication in a shop also permits better control in making the glued joints. Shop equipment recommended for the prefabrication work includes a planer, rip saw, either a radial-arm saw or table saw, a bandsaw, and a 16-foot-long treating tank. If surfaced lumber is used a planer is not needed.

It is easy to vary the design of the cabin. For instance, it can be lengthened by adding 4-foot sections. The rigid

frames can be made to span 20 feet in width (plus overhang) by lengthening the 2- by 6-inch rafters. Spans greater than 20 feet would require larger rigid-frame members.

The cabin can be made weathertight by installing glass windows in place of screens, closing in the ceiling and insulating the roof, and sheathing and insulating the sidewalls before applying the board-and-batten siding.

The wall framing in this cabin makes it feasible to install any of a variety of interior wall-covering materials such as solid wood paneling or sheets of plywood, hardboard, or plaster board paneling.

As designed, the cabin is one large room. However, partitions can be easily installed to form closets and to screen kitchen and sanitary facilities. Plumbing for a kitchen and bathroom can be located wherever desired and installed whenever convenient if the cabin is built on piers or a foundation. Holes for water pipes and drains can be bored through the floor or sill plates without making structural changes in the framing. However, if the cabin is erected on a concrete slab, the plumbing should be in place before the slab is poured.

### Costs

We believe this cabin can be built for as little as \$1,700 in labor and materials if parts are prefabricated in a well-equipped shop and if the cabin is erected by skilled workers. Our costs were somewhat higher but we built the cabin with semi-skilled workers. Further labor savings are possible if surfaced dimension stock and siding material is used but at least part of these savings must be used to pay for the ready-to-use material. Using rough dimension stock and siding we had a material cost of \$850 (current prices in Carbondale, Illinois).

A bill of materials and construction details and plans can be obtained by writing to the Central States Forest Experiment Station, at 111 Old Federal Building, Columbus, Ohio 43215, or P.O. Box 760, Carbondale, Illinois 62902.

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(Maintained in cooperation with  
Southern Illinois University)